

Flight Scientist Report  
Wednesday 6/30/2021 ACTIVATE RF92

Flight Type: Statistical Survey Flight  
Flight Route: KFLI-ATLIC-ZIBUT-3740N06922W-ZIBUT-ATLIC-KLFI  
Special Notes:

**King Air**

Pilot report (Wusk):

Planned as a UC-12 double flight day; cooperative flight with the HU-25. Planned route: KFLI ATLIC ZIBUT 3740N06922W ZIBUT ATLIC KFLI. UC12 takeoff from runway 26 ahead of HU-25. Good ATC departure and climb to FL280. Generators held a good balance. Profile out to TP and back to ATLIC was nominal. Before reaching the TP, a second lat/long of 37N7130W was added to put return leg more through cloud field. Started the descent into Langley just prior to ATLIC. ATC gave vectors for a ILS 26. Normal landing at KFLI, runway 26. 4x dropsondes deployed; ZIBUT EB, turn point, 1/2 to ZIBUT WB, East of ATLIC. Good coincidence throughout flight. Crew was Delaney, Wusk, Harper.

Flight scientist report (Harper):

UC12 Takeoff: 12:22:03

Aircraft coordination: UC12 less than 1min out to approx 10min before outbound turn.

Directly on top of HU25 after the inbound turn all the way thru return leg.

Upper level cirrus above us started at approx 15:00utc on return leg just after ETMEY.

Sonde 1: 13:20utc just after ZIBUT

Sonde 2: 13:58utc 1min before out bound turn

Sonde 3: ~14:24utc. Midway point of outbound leg

Sonde 4: 1min before descent at ATLIC

hex-chat not working for first 30to40min of flight

No instrument problems.

**Falcon**

Pilot report (Baxley):

Takeoff (Z): 1222 / Land: 1544

Science flight for the HU-25 in support of ACTIVATE Campaign #4, conducted cooperatively with the UC-12. Route of flight planned for KFLI-ATLIC-ZIBUT-3740N06922W-ZIBUT-ATLIC-KLF, and during the flight 3700N07130W was inserted between the eastern most point and ZIBUT. Departed Rwy26 with left climbing turn direct to ATLIC climbing at 5k ft MSL for initial transit, then descending to 500' MSL approximately 25 nautical miles east of KLF. Winds were light (<15kts) out of the west throughout the flight, with clouds primarily east of ZIBUT and 1000' – 6000' MSL. Time coordination with the UC-12 was always within 10 minutes, and usually less than 2 minutes. At approximately 3656.2N07333.4W (~42 nm east of OUTES) on the return leg, the HU-25 flew ~1 nm north of ARC ship steaming east bound, which created a significant spike in all measurements (approximately 1450Z). All objectives were achieved and with no discrepancies noted, with the exception of no auto-pilot heading hold for the HU-25.

Flight scientist report (Ziemba):

Route: Zibut to the east

Clouds:

- Generally patchy weak convective cumulus throughout track at 1500-2500ft. Some more organized convergence lines of cloud with tops at 6-7000ft altitude.

Aerosol:

- Fairly clean aerosol conditions associated with sub-tropical high. Mostly sulfate from on-board AMS measurements. Coastal number concentrations were higher than over water, as has been typical throughout deployment.

Flight notes:

- Clear#1: MBL was very low, ~600ft. MinAlt leg also is BBL. Chose 2 levels in the residual layer for the ensemble.
- Clear#2: only two legs at MinAlt and a let in the FT. Profile through residual layers
- Cloudy#1: ACB/BCB pairs were in puffy-cu. Since we could see more developed cloud, chose to do ACT and BCT for more developed cloud with variable tops above 6000ft. Altitudes for those legs ended up at nearly the same altitude because of changing heights. Did not get a Min-Alt because of timing.
- Cloudy#2: Rain observed at 13:54 and 14:07. Again, BCB/ACB (puffy cu) and ACT/BCT (more developed) were for different cloud types.

- Cloudy#3: Rain at 14:31. ACB done at 2 different altitudes as cloud heights shifted. All legs here are referenced to the same puffy-cu, no more-developed clouds here. ACT done in what we thought was cloud-processed “outflow”. Possible ship plume at 14:55.
- Clear#3: patchy clouds were in the area, focused on cloud-free legs for the ensemble because they were not going to be around long. Tried to get a FT sample but did not get quite high enough to get out of all the aerosol.

Eddie:

12:23:54 Takeoff

13:54 Rain

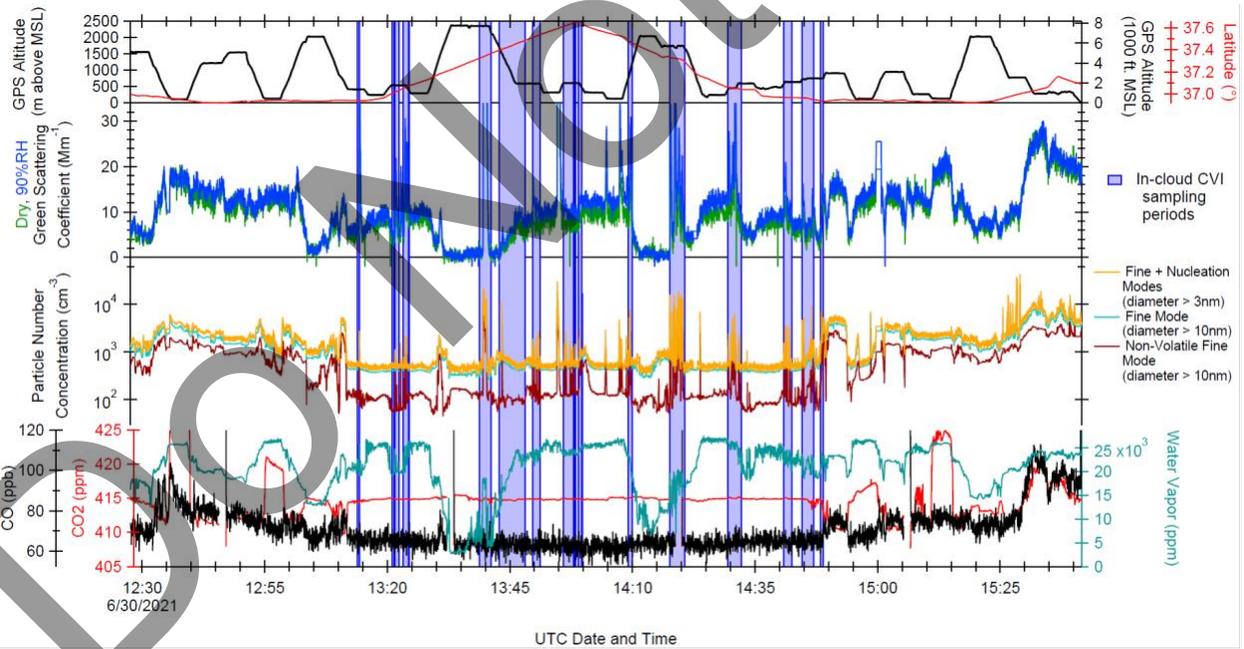
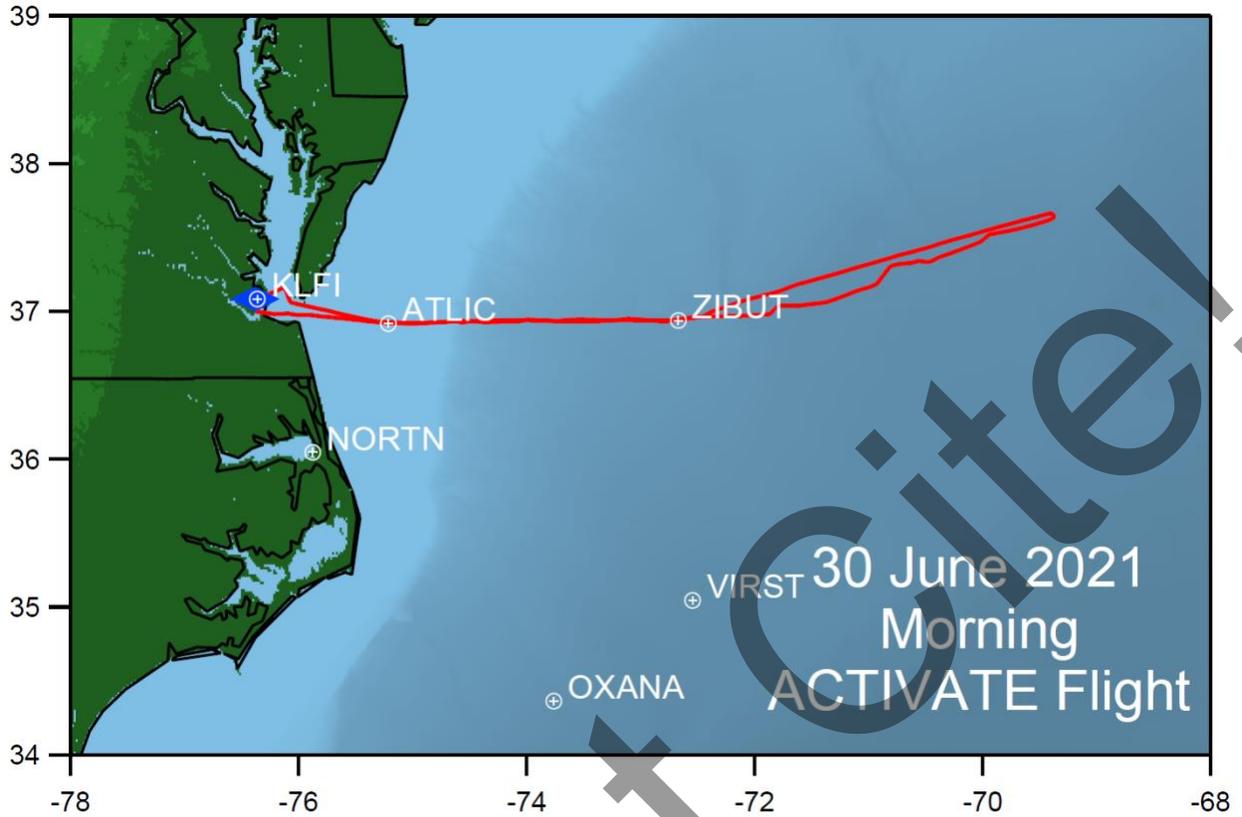
14:17 to 1420 In nice cloud

14:58:33 Hit ship plume. High CPC concentration and AMS SO<sub>4</sub> in clear air.

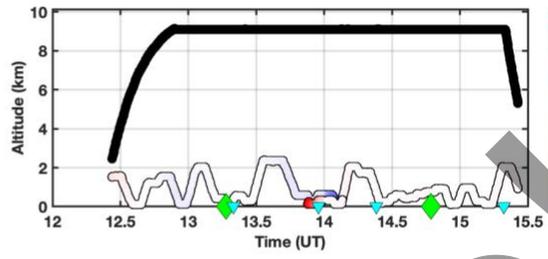
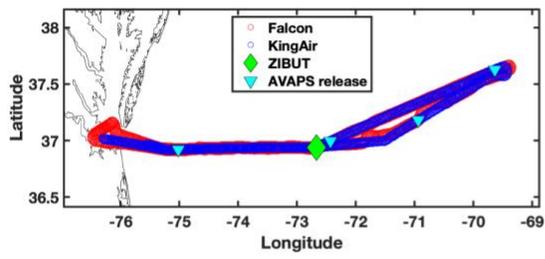
15:25 to 15:28 Cold and Ultrafine CPC concentration spikes in clear air. Near coast. Lot of ships below.

15:33 WCM and humidifier turned off in preparation for landing.

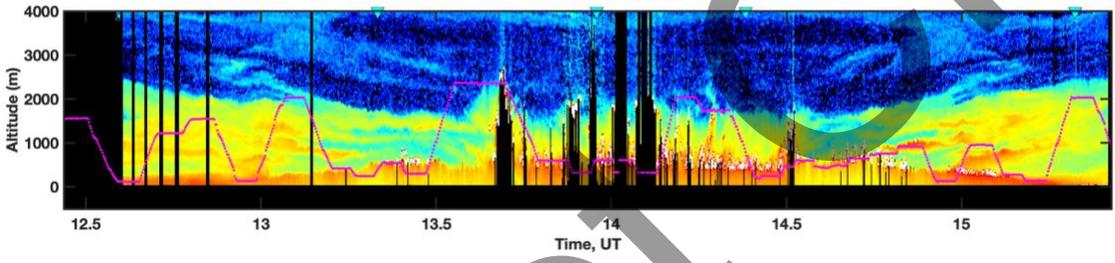
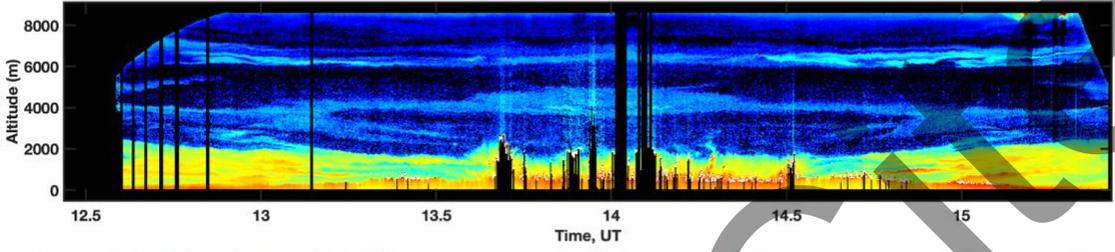
15:41:41 Landing



### 20210630 - ACTIVATE - KingAir and Falcon flight tracks



Time Difference (UC12-HU25) (min)



Aerosol Scattering Ratio (532nm)

DO NOT

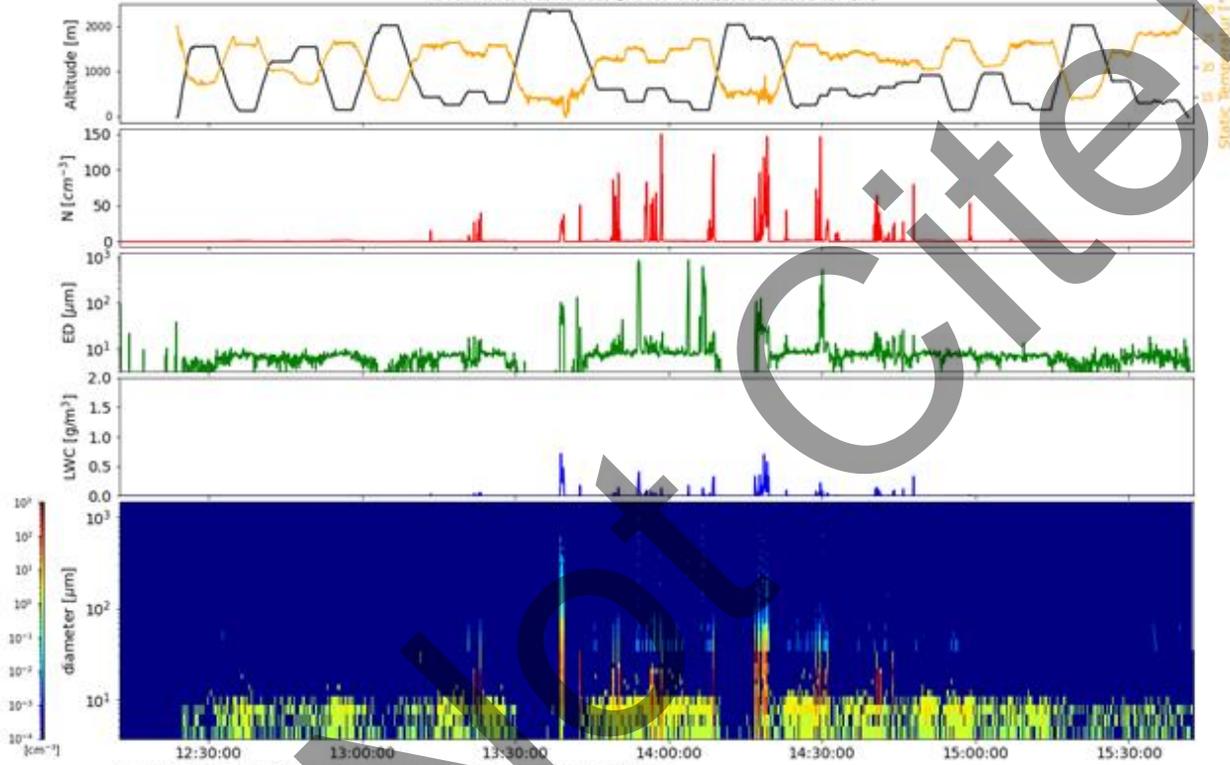
# Quicklook ACTIVATE Cloud Probes (FCDP & 2DS) Quicklook

preliminary data, only for quicklook use

Simon Kirschler, Christiane Voigt, Richard Moore, Ewan Crosbie



Cloud Probes (FCDP & 2DS) Quicklook 30/06/2021 12:12:32-15:42:43

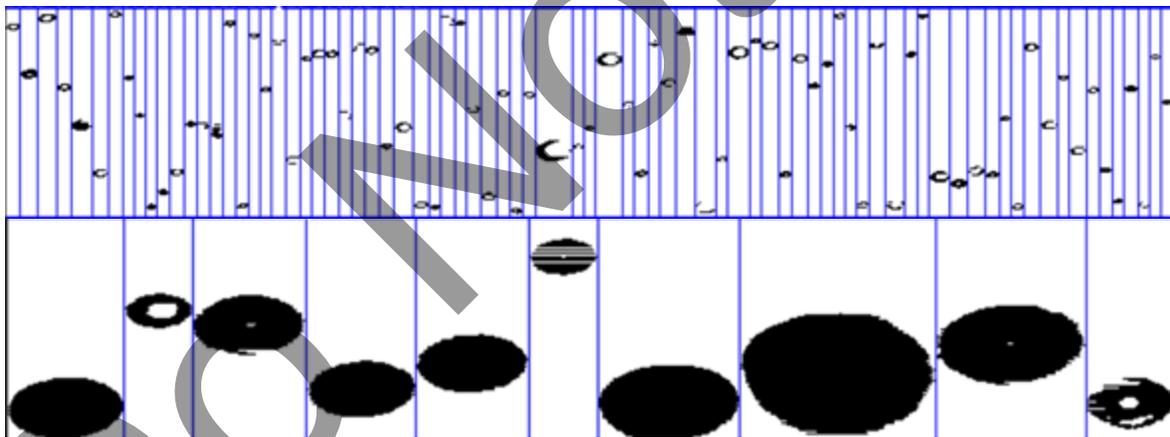
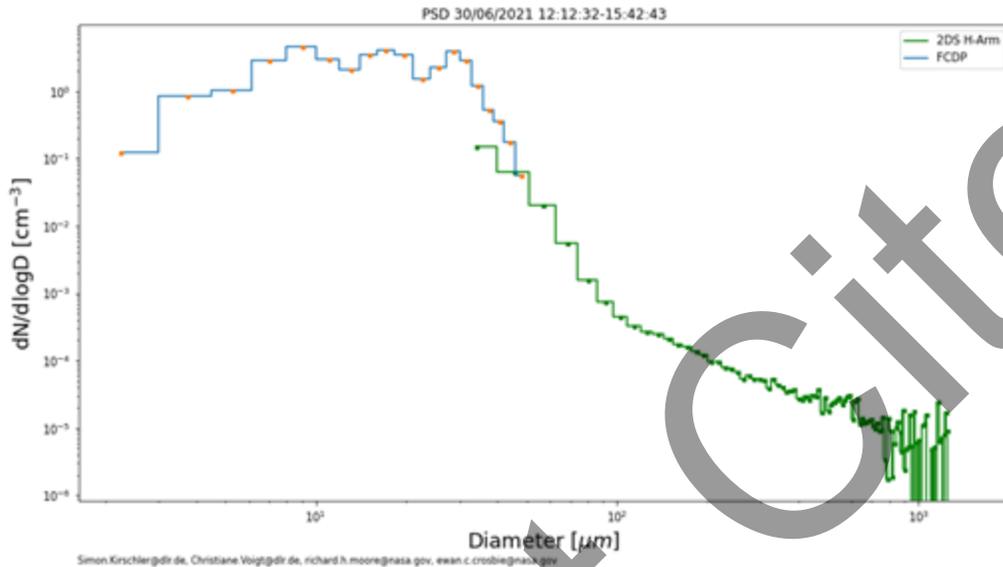


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Do Not Cite

# PSD ACTIVATE

preliminary data, only for quicklook use  
Simon Kirschler, Christiane Voigt, Richard Moore, Ewan Crosbie

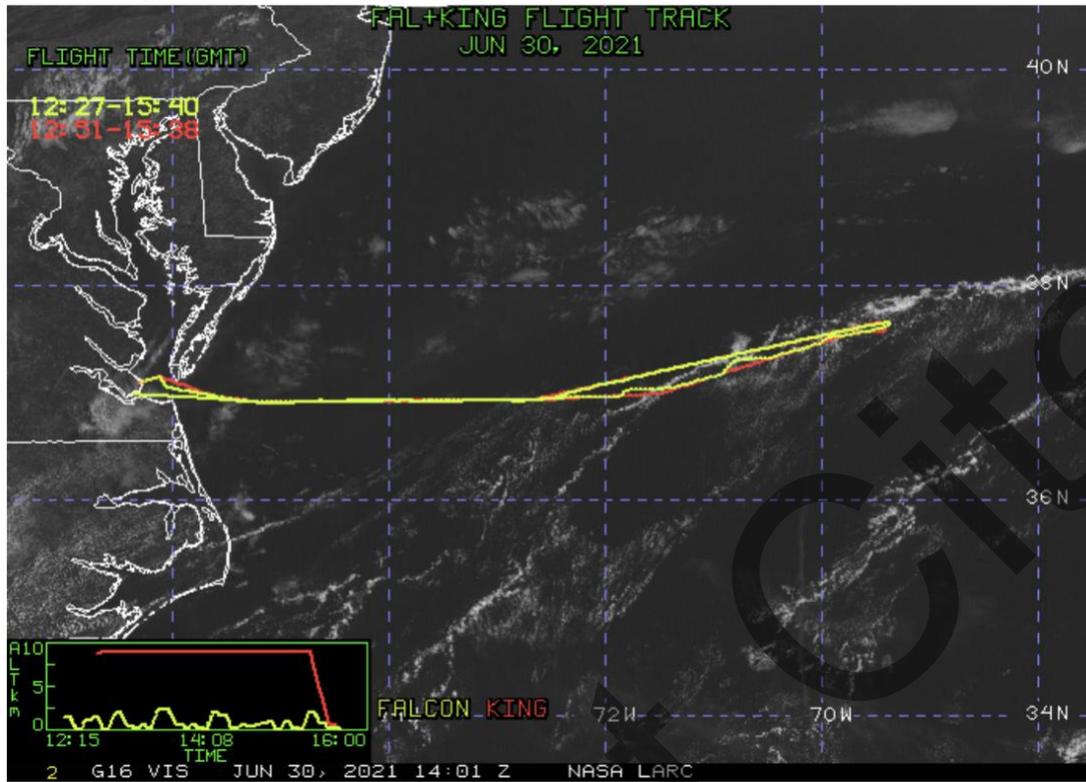


Only pure liquid clouds with drizzle and precip.

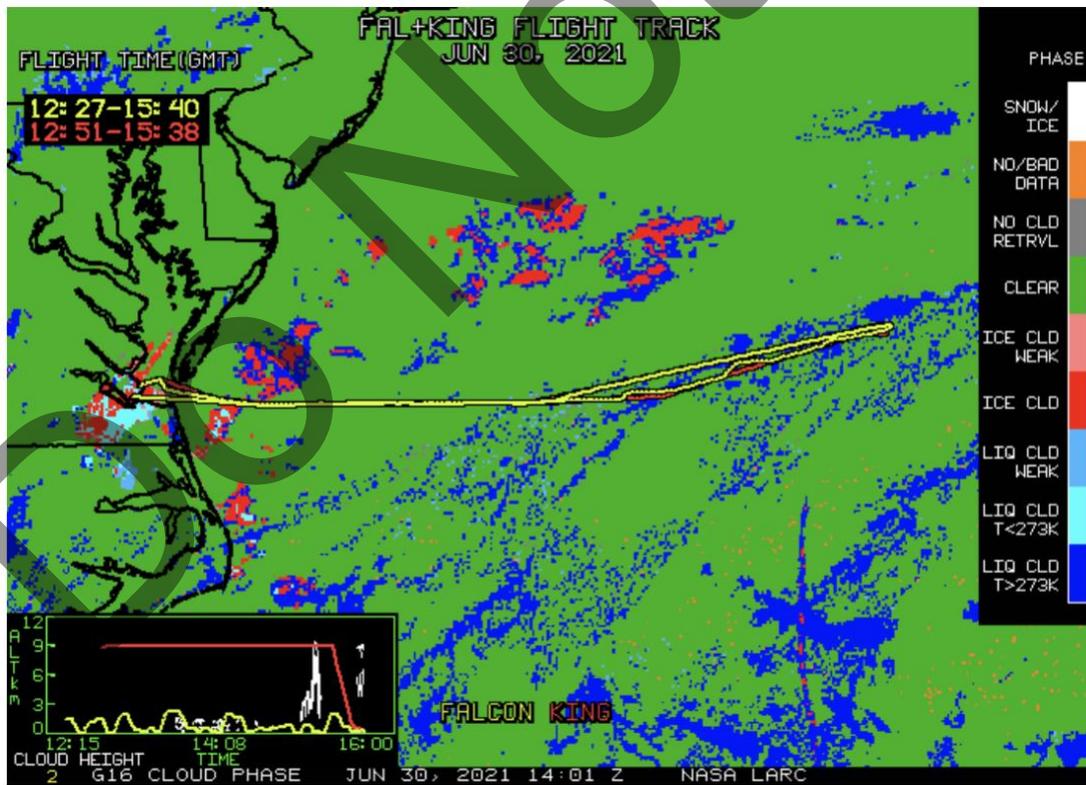
NASA-LaRC Clouds Group GOES-16 Quicklook Images for Flight 92, 14:01 UTC Jun 30, 2021

Do Not Cite!

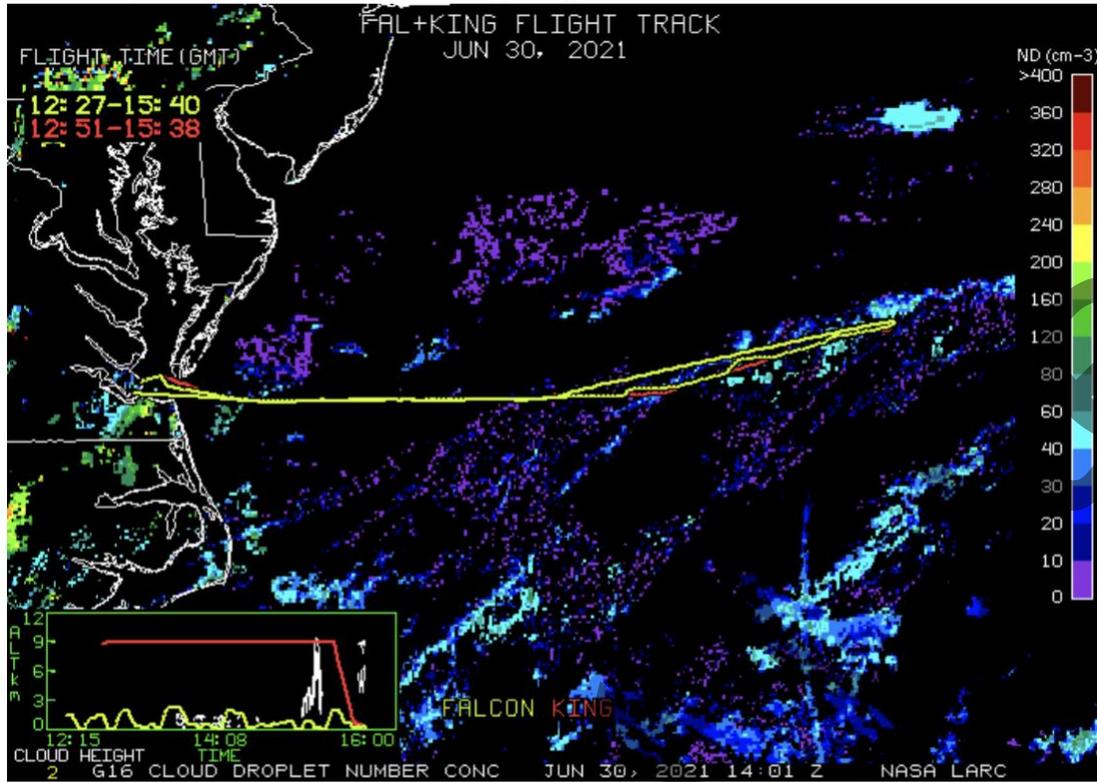
Visible Image



Cloud Phase



Cloud Droplet Number Concentration (cm-3)



Cloud-Top Height (Kft-ASL)

